

gene pools in perpetuity until a time when effective HWA management strategies are in place and conserved seed resources can be utilized to repopulate depleted hemlock ecosystems. Should adelgid control remain elusive, the seed banks and conservation reserves will serve as a genetic base for breeding HWA resistant stock for reforestation.”

The North Carolina Department of Agriculture and Consumer Services, Plant Industry Division (NCDA). NCDA is also active in hemlock conservation. First, NCDA regulates the movement of infested nursery stock and works with nurseries to ensure that infested plants are not moved to uninfested areas. In addition, the agency’s Beneficial Insects Rearing Laboratory in Cary, NC, rears predatory *Sasajiscymnus tsugae* beetles for the USDA Forest Service guidelines to release at strategic sites.

Information and Education. Hemlock woolly adelgid related information and education materials, including brochures, bulletin board posters and fair display posters have been developed, printed and made available to appropriate DFR offices, state parks, and NCSU Cooperative Extension offices and online. These were funded by a redesign grant from the USDA Forest Service. In addition, a short online instructional video (podcast) is being developed by DFR staff to show how to safely control HWA through pesticide soil drenching. NC State Extension also provides online recommendations for HWA control in landscapes (www.ces.ncsu.edu/depts/ent/notes/Ornamentals_and_Turf/trees/note119a/note119a.htm).

United States Department of Agriculture, Forest Service, Forest Health Protection Program. Leadership, guidance, coordination, research and funding for hemlock woolly adelgid related activities in the eastern United States is provided to state and federal agencies and to colleges and universities by the USDA Forest Service.

Conclusion

Unfortunately, high rates of mortality are already occurring throughout the hemlock forests of North Carolina and no one knows what the future will hold for the hemlock species across the East Coast. Our hope is that through monitoring and continued treatments, we will be able to save some of the most prized hemlocks on state lands for future generations to enjoy. Without these treatments occurring, it is doubtful that any of our local hemlocks will survive the current attack from this invasive pest.